

IOC/BGR/ENV/REP/MoEF/2016-17/01

Date: 28.12.2016

To

The Chief Conservator of Forests

Regional Office, North East Region

Ministry of Environment & Forests & Climate Change

Law-U-SIB, Lumbatngan, Near M.T.C. Workshop,

Shillong – 793021

Subject: Half Yearly Report for the period of (1st April, 2016 to 30th September, 2016) for “Refinery Expansion Project”

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of **1st April, 2016 to 30th September, 2016** for your kind perusal.

The reports are being sent as per EIA Rules'2006 for the “Environmental Clearances” issued by MoEF&CC to Bongaigaon Refinery, (BGR) for “Refinery Expansion” Project.

Thanking you,

Yours faithfully,

(V.K. Kedia)

Chief Manager (HSE)

Copy to:

1. Member Secretary, Pollution Control Board, Assam
Bamunimaidam, Guwahati - 781 021
2. Zonal Officer, Central Pollution Control Board
Eastern Zonal Office, 'TUM-SIR', Lower Motinagar,
Near Fire Brigade H.Q., Shillong – 793014

Half Yearly Report for “Refinery Expansion Project” (1st April, 2016 to 30th September, 2016)

Environmental Clearance for Refinery Expansion, De-bottlenecking of Reformer and LPG facility vide MoEF’s letter No. J.11011/24/90-IA-II dated 03/06/1991:

Plant Commissioning dates:

- 1. Crude Distillation Unit – II: 09.05.1995**
- 2. Delayed Coker Unit – II: 06.03.1996**

Sl. No	Conditions	Status
1.	General & specific conditions Compliance status of Refinery Expansion Project	Annexure- A
2.	Six monthly Stack Monitoring/ Air Quality Data	Furnished in Appendix-A1
3.	Six monthly effluent discharged quantity, Quality	Furnished in Appendix-A2
4.	Tree Plantation Data	Furnished in Appendix-A3
5.	Additional Information	Furnished in Appendix-A4
6.	Fugitive Emission Data	Furnished in Appendix-A5
7.	Report on Phytodiversity in IOCL Bongaigaon Refinery Campus	Furnished in Appendix-A6
8.	Annual return of hazardous waste	Furnished in Appendix-A7(a)
9.	Authorization from PCBA under Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008)	Furnished in Appendix-A7(b)
10.	Details of Waste water treatment and disposal system	Furnished in Appendix-A8
11.	Quarterly Noise Survey Report.	Furnished in Appendix-A9
12.	Status of Rainwater Harvesting	Furnished in Appendix-A10
13.	Screen Shot of IOCL Website upload of report	Furnished in Appendix-A11
14.	Organogram of hse Department	Furnished in Appendix-A12
15.	Gazette Notification of BGR Quality Control laboratory (QC Lab) approval under	Furnished in Appendix-A13
16.	Employees Occupational Health Check up Status	Furnished in Appendix-A14
17.	Flare system.	Furnished in Appendix-A15

ANNEXURE – A

Sr. No	General Conditions	Compliance Status
1	The project authority must strictly adhere to the stipulations made by Assam State Pollution Control Board and State Government and the comprehensive EIA will be submitted within 18 months.	<ol style="list-style-type: none"> 1. All stipulations by Pollution Control Board of Assam are strictly followed. 2. Copy of comprehensive EIA prepared for the Refinery Expansion was submitted to MOEF, New Delhi and also to MOEF Shillong vide our letter ENV/MIN/94/05 dated 15/06/94.
2	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.	<ol style="list-style-type: none"> 1. Proposal for expansion of Refinery-2 is submitted to MOEF&CC for Environment Clearance. All expansion activities are dealt as per provision of the EP Act and other applicable acts.
3	The gases emission from the various process units should conform to the standard prescribed by the concern authorities, from time to time. At no time the emission level should go beyond the stipulated standards.	<ol style="list-style-type: none"> 1. The process units are designed to meet the prescribed standards. 2. Units would be put out of operation in the event of mal functioning of pollution control practice at BGR. <p style="text-align: center;">Pl. Refer appendix A1.</p>
4	Adequate number of (a minimum of 5) of Air quality monitoring stations should be set up in the down wind direction as well as where maximum ground level concentration is anticipated. Also, stack emission should be monitored by setting of automatic stack monitoring unit.	<ol style="list-style-type: none"> 1. Six Ambient Air Quality Monitoring Stations are operating around the complex at BGR including one continuous analyzer set up for compilation of Ambient Air Quality Standards. 2. All these stations are selected based on modeling exercise representing short-term maximum ground level concentration. 3. All major stacks in BGR are monitored with continuous analyzers installed for SO₂, NO_x, PM & CO Analysis in all stacks as per CPCB guidelines.
5	There should be no change in the stack design without the approval of State Pollution Control Board. Alternative Pollution Control system and design (steam injection system in the stack) should be provided to take care the excess emission due to failure in any system of the plant.	<ol style="list-style-type: none"> 1. No changes are made to the stack design. 2. Steam injection facility is provided in burners of the furnaces.
6	The ambient Air Quality Data for winter season (November 1990 to January 1991) should be presented by June 1991.	These data were submitted as desired during 1991.
7	The project authority should recycle the waste to the maximum extent. Recycle plan should be submitted within one year. This should include use of recycled water for green belt development plan.	BGR has installed Tertiary Treatment Plant to facilitate reuse of treated effluent inside the complex as Cooling Water & Firewater Make up, unit housekeeping and watering in plantation areas inside. Only nominal quantity of effluent is being discharged through Eco park to outside the complex.

Sr. No	General Conditions	Compliance Status
8	Adequate number of effluent quality monitoring stations must be set in consultation with State Pollution Control Board and the effluents monitored and should be statistically analysed and the report sent to this Ministry once in six month and State Pollution Control Board every three months.	<ol style="list-style-type: none"> 1. Three joint sampling points for effluent are fixed in and around BGR by Pollution Control Board, Assam (PCBA) to monitor the discharge effluent quality. Joint sampling by Pollution Control Board, Assam is conducted once a month. The samples are tested at PCBA Laboratory. 2. Beside samples are tested at BGR Laboratory as per consent condition and also on a daily basis to track effluent quality. 3. All samples conform to the prescribed Revised Effluent Standards 2008 (Please Refer Appendix-A2).
9	The project authority should prepare a well-designed scheme for solid waste disposal generated during various process operations or in the treatment plant. The plan for disposal should be submitted to the ministry within six months.	<ol style="list-style-type: none"> 1. All solid waste generated during various process operations or in the treatment plant are handled and disposed off as per laid down procedures in ISO-14001 in environmentally friendly manner. 2. All hazardous wastes are handled and disposed off as per provisions of the Hazardous Waste (Management, Handling & Trans boundary Movement) Rules, 2008 and as per directions of statutory agencies. 3. As a measure of Haz. Waste Management, M/s Balmer Lawrie & Co. Limited was awarded the contract of mechanized treatment of tank bottom sludge. Melting pit facility is available for recovering oil from oily sludge. 4. Study is going on for confined bio-remediation of remaining oily sludge with IOCL R&D. 5. All statutory returns are sent to PCBA as per the provision of rule.
10	A detailed risk analysis of LPG storage facility should be carried out and a report be submitted to the ministry within six months.	Risk Analysis for LPG Storage was prepared and submitted to MOEF in 1992. Applied for environment clearance for mounded bullet as per M.B. Lal committee Report.
11	A detailed risk analysis based on maximum credible accident analysis should be done once the process design and layout frozen. Based on this a disaster management plan has to be prepared and after approval of the nodal agency, should be submitted to this ministry within 6 months.	<p>Detailed risk analysis was prepared and the report was submitted to MoEF.</p> <ol style="list-style-type: none"> a) On site emergency plan exists and mock drills are conducted time to time to verify effectiveness of the plan as per OISD guidelines. b) Off site emergency plan approved by District authorities exists. Mock drills are conducted time to time to verify effectiveness of the plan in co-ordination with district authorities.

Sr. No	General Conditions	Compliance Status
12	Detailed green belt development plan should be submitted within a year.	Green belt development plan was a part of the comprehensive EIA and the same is already submitted to MOEF. The plan was implemented.
13	A report on occupational health of the workers with the incidents of diseases in the past five years as per record available with the BRPL and their correlation with type of occupational health problem the environment may cause may be submitted within six months.	The report is already submitted as desired. Latest data is attached in appendix A-14
14	The project must setup a laboratory facility for collection and analysis sampling under the supervision of competent technical personal that will directly report to chief executive.	A well-equipped Laboratory exists in the complex. Environment Laboratory of BGR is accredited by NABL and recognized by C.P.C.B. as approved under Section 12& 13 of Environment (Protection) Act 1986 and notified in the Govt. of India Gazette no. 272 dated July 4, 2016 vide notification number Legal 42(3)/ 87 dated 7th March 2016. (Copy attached as Appendix-A13)
15	A separate environmental management cell with full-fledged laboratory facilities to carry out various management and monitoring functions should be set up under the control of Senior Executive.	BGR is having a separate environmental management cell of HSE department and full fledged laboratory to carry-out environment management and monitoring functions. Organogram of HSE Department is attached as Appendix-A12.
16	The funds earmarked for the environmental protection measures should not be diverted for any other purpose and year-wise expenditure should be reported to this Ministry and SPCB.	The funds earmarked for the environmental projects are used for this purpose only and not diverted or spent for other purposes.
17	The Ministry or any competent authority may stipulate any further condition(s) on receiving reports from the project authorities.	--
18	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	--
19	The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	--

APPENDIX –A1

STACK MONITORING DATA

(1st April 2016 to 30th September 2016)

A. SO₂ Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	6	231	954
CDU-II		10	247	487
DCU-I		4	200	857
DCU-II		3	203	498
CPP		14	300	686
Reformer		2	15	107
HO-1		3	19	57
Isomerisation		1	14	35
DHDT		8	90	449
HGU		1	17	309
SRU		2	200	449
GTG		34	38	47

B. NO_x Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	7	183	448
CDU-II		7	157	449
DCU-I		10	56	127
DCU-II		20	121	326
CPP		18	47	123
Reformer		11	54	73
HO-1		3	70	144
Isomerisation		8	46	68
DHDT		1	18	164
HGU		1	47	188
SRU		No Analyser		
GTG		13	35	313

C. PM Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	39.0	39.7	40.0
CDU-II		20.0	22.3	26.0
DCU-I		15.0	17.0	18.0
DCU-II		25.0	27.3	29.0
CPP		20.0	21.5	23.0
Reformer		4.0	7.0	9.0
HO-1/2		BDL	BDL	BDL
Isomerisation		10.0	10.7	12.0
DHDT		22.0	23.3	24.0
HGU		5.0	5.0	5.0
SRU		13.0	13.7	14.0

STACK MONITORING DATA

(1st April 2016 to 30th September 2016)

D. CO Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	22.0	23.7	25.0
CDU-II		24.0	25.7	29.0
DCU-I		26.0	27.7	29.0
DCU-II		20.0	24.3	28.0
CPP		12.3	19.1	23.0
Reformer		6.0	7.3	10.0
HO-1/2		4.0	5.3	7.0
ISOMERISATION		3.0	5.3	7.0
DHDT		5.0	7.0	9.0
HGU		8.9	11.6	13.0
SRU		9.0	11.0	14.0

E. Ni + V Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 5	BDL	BDL	BDL
CDU-II		BDL	BDL	BDL
DCU-I		BDL	BDL	BDL
DCU-II		BDL	BDL	BDL
CPP		BDL	BDL	BDL
Reformer		BDL	BDL	BDL
HO-1/2		BDL	BDL	BDL
ISOMERISATION		BDL	BDL	BDL
DHDT		BDL	BDL	BDL
HGU		BDL	BDL	BDL
SRU		BDL	BDL	BDL

7	Arsenic (As) (Std. 6 ng/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		47	47	47	47	47
8	Ni (Std. 20 ng/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		47	47	47	47	47
9	CO (Std. 2/4 mg/m³)						
	Min	0.01	0.28 (Tube well 3 T/S)			0.27 (Tube well 7)	
	Average	0.34	0.31 (Tube well 3 T/S)			0.30 (Tube well 7)	
	Max	2.02	0.40 (Tube well 3 T/S)			0.41 (Tube well 7)	
	No. of observation	Continuous	126			126	
10	Ozone (Std.100/180 µg/m³ for 8 hrs/1 hr)						
	Min	5.2	BDL	BDL	BDL	BDL	BDL
	Average	8.6	BDL	BDL	BDL	BDL	BDL
	Max	16.5	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	47	47	47	47	47
11	Benzene (Std. 5 µg/m³)						
	Min	0.01	BDL	0.5	BDL	0.7	BDL
	Average	0.01	BDL	0.5	BDL	1.3	BDL
	Max	0.02	BDL	0.6	BDL	2.5	BDL
	No. of observation	Continuous	47	47	47	47	47
12	Benzo (a) Pyrene (Std. 1 ng/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		47	47	47	47	47

Average of Six Stations

Parameter	SO₂	NO₂	PM-10	PM-2.5	NH₃	Pb	As	Ni	Benzo (a) Pyrene	CO	C₆H₆	O₃
Unit	µg/m³						ng/m³			mg/m³	µg/m³	
NAAQ Std. 2009	50/80	40/80	60/100	40/60	100/400	0.5/1.0	Max 6	Max 20	Max 1	2/4	Max 5	100/180
Min	3.3	4.1	6.6	0.06	2.5	BDL	BDL	BDL	BDL	0.01	0.01	5.2
Average	12.2	19.0	48.0	24.6	4.5	BDL	BDL	BDL	BDL	0.3	0.6	8.6
Max	73.6	73.3	96.9	48.0	25.3	BDL	BDL	BDL	BDL	2.0	2.5	16.5

Appendix-A2

Effluent Discharged (Figure in M³/Hr)

(1st April, 2016 to 30th September, 2016)

A	Industrial Effluent M ³ /Hr	173.81
B	Domestic Effluent from BGR Township M ³ /Hr	52.91
C	Total Effluent Treated (A + B) M ³ /Hr	226.72
D	Treated Effluent Reused M ³ /Hr	220.9
E	Effluent Discharged M ³ /Hr	5.9
F	M ³ of Effluent discharged for 1000 tons of Crude processed	20.84

1. Treated Effluent Quality

(1st April 2016 to 30th September 2016)

Sl. No	Parameter	MINAS,2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.5	7.2	8.5
2	Oil and Grease, mg/l	5.0	1.6	2.0	2.6
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	3.6	8.8	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	48.0	71.5	115.0
5	Suspended solids, mg/l	20.0	6.0	10.6	12.2
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.030	0.037	0.040
7	Sulphide (as S), mg/l	0.50	0.04	0.34	0.50
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	0.78	0.82	0.90
10	TKN, mg/l	40.0	1.00	1.10	1.20
11	P, mg/l	3.0	0.60	0.80	1.00
12	Cr (Hexavalent), mg/l	0.10		BDL	
13	Cr (Total), mg/l	2.0		BDL	
14	Pb, mg/l	0.10		BDL	
15	Hg, mg/l	0.01		BDL	
16	Zn, mg/l	5.0		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
19	V, mg/l	0.20		BDL	
20	Benzene, mg/l	0.10		BDL	
21	Benzo (a) pyrene, mg/l	0.20		BDL	

EFFLUENT QUALITY

2. Final Outlet (From the Complex) Effluent Quality

(1st April 2016 to 30th September 2016)

Sl. No.	Parameter	MINAS	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.5	7.3	8.5
2	Oil and Grease, mg/l	5.0	1.6	2.0	2.8
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	4.0	9.1	16.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	42.0	72.3	118.0
5	Suspended Solids, mg/l	20.0	8.0	10.6	13.2
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.020	0.039	0.40
7	Sulphide (as S), mg/l	0.50	0.080	0.345	0.48
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0		0.85	
10	TKN, mg/l	40.0		1.12	
11	P, mg/l	3.0		0.78	
12	Cr (Hexavalent), mg/l	0.10		BDL	
13	Cr (Total), mg/l	2.0		BDL	
14	Pb, mg/l	0.10		BDL	
15	Hg, mg/l	0.01		BDL	
16	Zn, mg/l	5.0		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
19	V, mg/l	0.20		BDL	
20	Benzene, mg/l	0.10		BDL	
21	Benzo (a) pyrene, mg/l	0.20		BDL	

Appendix - A3

Tree Plantation (1st April, 2016 to 31st September, 2016)

The entire area inside BGR covers with Greenery through massive plantation activities. Through massive plantation work and by giving protection to natural forest growth in side BGR premises, the entire area has become green. The entire plant area where processing plant facilities do not exist has a green cover. This helps in reduction of noise and air pollution level in one hand while on the other hand provides protection to ecological features of the area. The refinery has an excellent quality environment around its complex. Natural greenery can be seen all around the complex and in all seasons of the year.

Tree Census was done by Divisional Forest Office, Chirang. As per census, 84545 numbers of plants which include trees including shrubs, ocular estimated 33000 numbers bamboos in 1150 no. bamboo culms and also trees planted by BGR during 2003 to 2012.

During, 1st April, 2016 to 31st September, 2016 BGR has planted 1061 no. of trees.

Appendix – A 4

Additional Information (1st April, 2016 to 30th September, 2016)

Effluent reused during the period was around **97.41%** of the total effluent treated which includes plant effluent as well as BGR Township sewer.

Under the Leak Detection and Repair programme (LDAR), BGR is conducting quarterly Fugitive Emission Survey. During the period from **1st April, 2016 to 30th September, 2016, 23102** potential leaky points checked and **166** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **38.35** MTA (approx.) of light Hydrocarbon to the atmosphere through fugitive sources but also able to keep healthy work environment in the plants.

To ensure work area quality and health of equipments, quarterly noise survey was conducted covering all the operating plants, control rooms and ambient surrounding the BGR. During **1st April, 2016 to 30th September, 2016,** Noise Survey for two quarters of 2015 -16 has been completed and no abnormality was reported.

As a measure of Hazardous Waste Management, M/s Balmer Lawrie & Co. Limited was awarded the contract of mechanized oily sludge processing. To establish confined space bioremediation study is being done in association with IOC R&D.

Further two more Rain Water Harvesting (Ground Water Recharging) schemes in BGR Township have been implemented during the period.

APPENDIX –A5

Quarterly Fugitive emission Data 1st April 2016 to 30th September,2016

Annexure -2

The quarterly Fugitive emission reports for the period of 1st April 2016 to 30th September,2016.

Fugitive Emission Survey for the 1st Quarter of 2016-17

Environment Department is conducting quarterly "Fugitive Emission Survey" of potential sources of various process units under Leak Detection & Repair Program (LDAR) and as per revised Effluent & Emission standards. The locations for the survey were selected in consultation with the departments. The survey covered the following units and areas:

- (i) Process Units: CDU-1, CDU-2+FGRS, DCU-1, DCU-2, CRU+MSQ, DHDT, HGU.
- (ii) Offsite Area: Tank age & TLG, Wagon Loading Gantry, LPG Plant.
- (iii) CPP
- (iv) Gas Turbine Generator (GTG).
- (v) TSV of Products and Crude Pipe lines.

Leak definition: A leak is defined as the detection of VOC concentration more than the values (in PPM) specified below at the emission source using a hydrocarbon analyzer according to measurement Protocol (US EPA – 453/R-95-017, 1995 Protocol for equipment leak emission estimates may be referred):

Sl. No	Component	General Hydrocarbon (PPM)
		w.e.f. January 01, 2009
1	Pump/Compressor	5000
2	Valves/Flanges	3000
3	Other components	3000

In addition, any component observed to be leaking by sight, sound or smell regardless of concentration (liquid dripping, visible vapor leak) or presence of bubbles using soap solution should be considered as leak.

In this quarter, **11551** probable leak points are surveyed and **84** leaky points detected, which is having HC potential loss **25.057 MT/Year**

A summary of fugitive emission survey is tabulated below for perusal and necessary action at your end please:

1. Summary of Fugitive Emission Survey
2. Total points surveyed & Leak Points percentage
3. Potential Emission Data
4. Status of Leak Points: Component-wise
5. Units and Year-wise Total Points surveyed
6. Details of unit-wise Leaks remained to be rectified
7. Leaks and Leak remaining for Shutdown (Statistics)
8. Unit-wise leaks remained as shutdown jobs
9. Chronology of Measurement, ATR & Recheck
10. Details of Leaks with potential emission Kg/Yr
11. Potential Emission Data Liquid & Gas MT/Yr
12. Unit wise details of leak points repetitive in nature for the year 2016-17

APPENDIX-A6

REPORT ON STUDY OF PHYTODIVERSITY IN IOCL BONGAIGAON REFINERY CAMPUS

**STUDY CONDUCTED BY CHIRANG FOREST DIVISION,
KAJALGAON**

**SUBMITTED BY
DIVISIONAL FOREST OFFICER
CHIRANG FOREST DIVISION**



**SUBMITTED TO
INDIAN OIL CORPORATION LIMITED
BONGAIGAON REFINERY , DHALIGAON, ASSAM**

APPENDIX-A7(a)

j FORM-4

[See rules 5 (6) and 22 (2)]

FORM FOR FILLING ANNUAL RETURNS BY THE OCCUPIER OR OPERATOR OF FACILITY

[To be submitted by occupier / operator of disposal facility to State Pollution Control Board/ Pollution Control Committee by 30th June of every year for the preceding period April to March]

For the period from April, 2015 to March, 2016

1	Name and address of the generator/operator of facility:	Indian Oil Corporation Limited. Bongaigaon Refinery, Dhaligaon. Dist: - Chirang. Assam. PIN - 783385.		
2.	Name of the authorized person and full address with telephone and fax number:	Shri A. Saikia; Senior Manager (HSE). Indian Oil Corporation Limited. Bongaigaon Refinery, Dhaligaon, Dist: - Chirang. Assam. PIN - 783385 Telephone No. 03664-253352		
3.	Description of hazardous waste:	Type of hazardous waste	Physical form with description	Chemical form
		(a) 4.1 Oily Sludge	Sludge (O&G, Water and Solids)	% O&G= 20-25%
		(b) 4.2 Spent Catalyst	Solid	Contains:45.5% Ni, 6.88% MgO, 5.25% SiO ₂
		(c) 4.3 Slop Oil	Liquid (Mainly Oil)	Oil = 5 - 95%
		(d) 5.1 Used/ Spent Oil	Liquid (Mainly Oil)	> 95% Mineral Oil
(e) 33.3 Discarded containers / barrels / liners used for hazardous wastes / chemicals	Solid (Metallic and / or Plastic)	MS, PVC etc.		
4.	Quantity of hazardous wastes (in MTA/KL):	Type of hazardous waste		Quantity (in Tonnes/KL)
		a) 4.1 Oily Sludge		Opening Stock (reassessed) = 1196 KL Generated = 2747 KL Processed = Nil KL Closing Stock = 3943 KL
		(b) 4.2 Spent Catalyst		Opening Stock = 18.868 M ³ (16.348 . Generated = 25.0 MT Disposed = 16.5 M ³ (=14.01 MT) Closing Stock = 27.368 MT

Annexure –A7(b)

Authorization from PCBA for Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008)



Consent under HW
Rules 2008.pdf

APPENDIX-A8

Detail of Waste water treatment and disposal system.

EFFLUENT TREATMENT FACILITIES AT BONGAIGAON REFINERY

Bongaigaon Refinery has a separate Waste Water Treatment Plant (WWTP) for treating the wastewater generated from the Refinery and the Petrochemical sections separately. The treated water from the wastewater treatment plant is further taken to a Tertiary Treatment Plant (TTP). The tertiary treated water is reused for cooling water & Fire water make-up of the complex. Surplus effluent is discharged to Eco-park.

The Waste Water Treatment Plants and TTP have the following facilities:

(A) Refinery Wastewater Treatment Plant:

The refinery wastewater includes phenol, sulphide, oil and grease, etc. Oil may appear in waste water as free oil, emulsified oil and as a coating on suspended matter. The sanitary sewage coming from plant / Bongaigaon Refinery Township and canteen effluent, is also treated along with the effluent from the refinery WWTP.

The Refinery waste water treatment plant has the following facilities:

(a) Primary (Physical) Treatment System

- i. **Surge Ponds.**
- ii. **Tilted Plate Interceptors (TPI):** For separation of free floating oil from effluent.
- iii. **Dissolved Air Flootation Units (DAF), two no.:** For removal of free & emulsified oil.
- iv. **pH Adjustment Section :** To maintain pH within required level.
- v. **Chemical (Polyelectrolyte & Alum) Dosing Section:** For coagulation and flocculation to reduce TSS.

(b) Secondary (Bio) Treatment Facilities:

- (i) **Trickling filter:** For reduction of BOD load.
- (ii) **Aeration Tanks (two no.):** For further reduction of BOD.
- (iii) **Clarifiers (two no.):** For settling and separation of Bio- sludge.
- (iv) **Guard Ponds (four no.):** Storing of treated effluent for final quality tests prior to sending to the tertiary treatment facilities.

Brief Description:

Oily waste streams from process units, laboratory, process / off-site pumping stations, loading areas, pipe trench drainage, etc. are collected in the main receiving sump and taken to the TPI. After free oil removal the in TPI effluent is collected in surge pond-1/2. After surge pond, the total flow is taken to Dissolve Air Flootation (DAF) section. Before effluent entering to the DAF, pH of the effluent is adjusted by sulphuric acid to about 7.5 to 8.0. The DAF separator removes most of the remaining oil from inlet effluent.

After primary treatment the effluent divided in **two streams**.

One stream goes to the trickling filter along with screened, de-gritted, domestic sewage (from the canteen / toilets etc.). The effluent from the trickling filter is taken to the transfer sump from where a part of it is re-circulated back to the trickling filter and the remaining part is sent to the Aeration tank -1. Nutrients mainly nitrogen and phosphorous in the form of urea and DAP are added to feed chamber of bio-filter as nutrient for the proper bio-oxidation of the organic matter.

ANNEXURE-A9

Quarterly Noise Survey Data

HSE (ENVIRONMENT) DEPARTMENT

ENV/Noise Survey/16-17/02

Date: 08/10/2016

Subject: Noise Survey for the 2nd Quarter of 2016-17

HSE (Environment) Department is conducting a quarterly noise survey in various locations and units (CPP, Refinery-1&2, WWTP, TTP, Pump Houses, CRU-MSQ, LPG, DHDT & HGU, CPP & GTG and Ambient Noise etc.). The locations for the survey were selected in consultation with concerned departments.

A set of complete/relevant report(s) of the survey carried out for the 2nd Quarter of 2016-17 is enclosed for your perusal and necessary action. It is observed that the threshold limit value of noise level in the areas where plant personnel are exposed continuously for 8 hours not exceeded 90 dB(A).

The limits for exposure to noise (as laid down in the Factories Act) are given below:

Sl. No.	Time (Hrs.)	Continuous noise dB (A)
1	8	90
2	4	95
3	2	100
4	1	105

Notes:

Exposure is prohibited in areas where noise level exceeds 115 dB (A).

It is recommended to provide display boards indicating high noise area (i.e. the area having noise level of 90 dB and above) and also to ensure use of proper PPE(Ear muf, Ear plug etc.) while working in high noise zone.

Regards

(V.K. Kedia)
C M (HSE)

ENV/Noise Survey/16-17/ 01

Date: 20/06/2016

Noise Survey 1st Quarter: 2016-17					
Noise Survey 1st Qtr: 2016-17 (April 2016 to June 2016)					
Units	>90 - 95	>95 - 100	>100 - 105	>105	Total
CDU-1	4	4	0	0	8
DCU-1	6	2	0	0	8
CDU-2	2	2	0	0	4
DCU-2	3	3	0	0	6
LPG	2	0	0	0	2
Utility	1	0	0	0	1
PH # 1	2	0	0	0	2
WWTP & TTP	1	0	0	0	1
OM&S	2	0	0	0	2
CPP	7	1	0	0	8
CRU+MSQ	17	6	0	0	23
DHDT	12	2	0	0	14
HGU	8	3	0	0	11
GTG	5	0	2	1	8
Quality Control Laboratory	2	0	0	0	2
Total	74	23	2	1	100

Summary of High Noise Points: (High Noise is meant here as 90 dB(A) or more)

ANNEXURE-A10

Rain Water Harvesting Data

Status of Rainwater Harvesting				
Sl. No	Location	Rooftop Area In M²	Volume of Rainwater harvesting potential (CUM)	Year of implementation
Implemented				
1	Rainwater Harvesting at Manjeera Guest House	677	1733	2008-09
2	Rainwater Harvesting at Deoshri Guest House	581	1487	2008-09
3	Mandir Complex	833	2132	2011-13
4	MANAS GUEST HOUSE	639	1636	2011-13
5	BRPL VIDYALAYA	1361	3484	2011-13
6	DPS BLOCK-I	704	1802	2011-13
7	DPS BLOCK-II	1810	4634	2011-13
8	Artificial Recharge thru' TW # 3 Roof Top water from Canteen, Cycle/Scooter Shades, CISF bldg. etc.	3134	8023	2011-13
9	Rainwater Harvesting from roof top area of Champa Club	1080	3100	2013-14
10	Rainwater Harvesting from roof top area of Refinery Club Cum Community Centre	2833	8132	2013-14
11	Rain Water Harvesting at CISF ADM Building	825	2368	2014-15
12	Rain Water Harvesting at BGREU Office	275	789	2014-15
13	CISF Barrack	1050	3013	2015-16
14	BGR Community Hall	650	1865	2015-16
15	Gallery of Football Stadium (BGR Township)			2016-17
16	Gallery of Volleyball Stadium (BGR Township)	988	2529	
	Total	17440	46727	

ANNEXURE-A11

Screen Shot of IOCL Website upload of report

Link: <https://iocl.com/Talktous/SNotices.aspx>

The screenshot shows a web browser window displaying the IOCL website. The page title is "Notices: IndianOil" and the URL is "iocl.com/Talktous/SNotices.aspx". The website header includes the IOCL logo, navigation links (Home, About Us, IndianOil For You, IndianOil for Environment, We're Listening, Tools), and a search bar. A navigation breadcrumb shows "We are Listening > Statutory Notices".

Statutory Notices

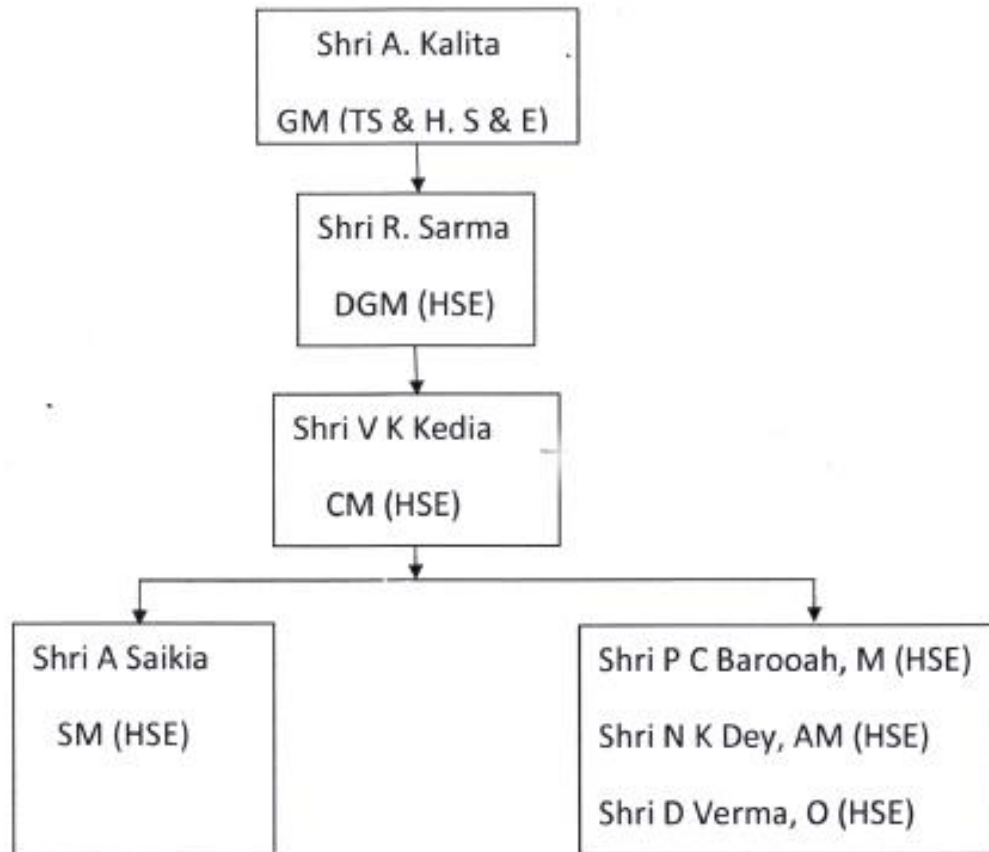
- Half-Yearly Environmental Clearance Compliance Report (October'15 to March'16) for Refinery Expansion Project - Bangaigaon Refinery
- Half-Yearly Environmental Clearance Compliance Report (October'15 to March'16) for MS Quality Improvement Project - Bangaigaon Refinery
- Half-Yearly Environmental Clearance Compliance Report (October'15 to March'16) for INDMAX Project - Bangaigaon Refinery
- Half-Yearly Environmental Clearance Compliance Report (October'15 to March'16) for Diesel Hydro Treatment Plant - Bangaigaon Refinery
- Half-Yearly Environmental Clearance Compliance Report (October'15 to March'16) for MS Maximisation Project - Bangaigaon Refinery
- EIA Report for Expansion of Bulk LPG Storage Capacity of LPG Bottling Plant, Trichy, Tamil Nadu
- EIA Report for Expansion of Bulk LPG Storage Capacity of LPG Bottling Plant, Trichy, Tamil Nadu
- Executive Summary for Expansion of Bulk LPG Storage Capacity of LPG Bottling Plant, Trichy, Tamil Nadu_Tamil version
- Environment Clearance for capacity augmentation of LPG Bottling Plant, Erode, Tamil Nadu
- EIA Report for Augmentation and Revamping of LPG Bottling Plant, Salem, Tamil Nadu
- Executive Summary for Augmentation and Revamping of LPG Bottling Plant, Salem, Tamil Nadu

On the right side of the page, there is a red button labeled "We are Listening" and a list of links: Help, PaHal-Related Queries, Other LPG Queries, Queries on Fuel Stations, Vigilance Queries, Right To Information, and Citizen Charter.

The Windows taskbar at the bottom shows the time as 9:48 AM on 9/30/2016.

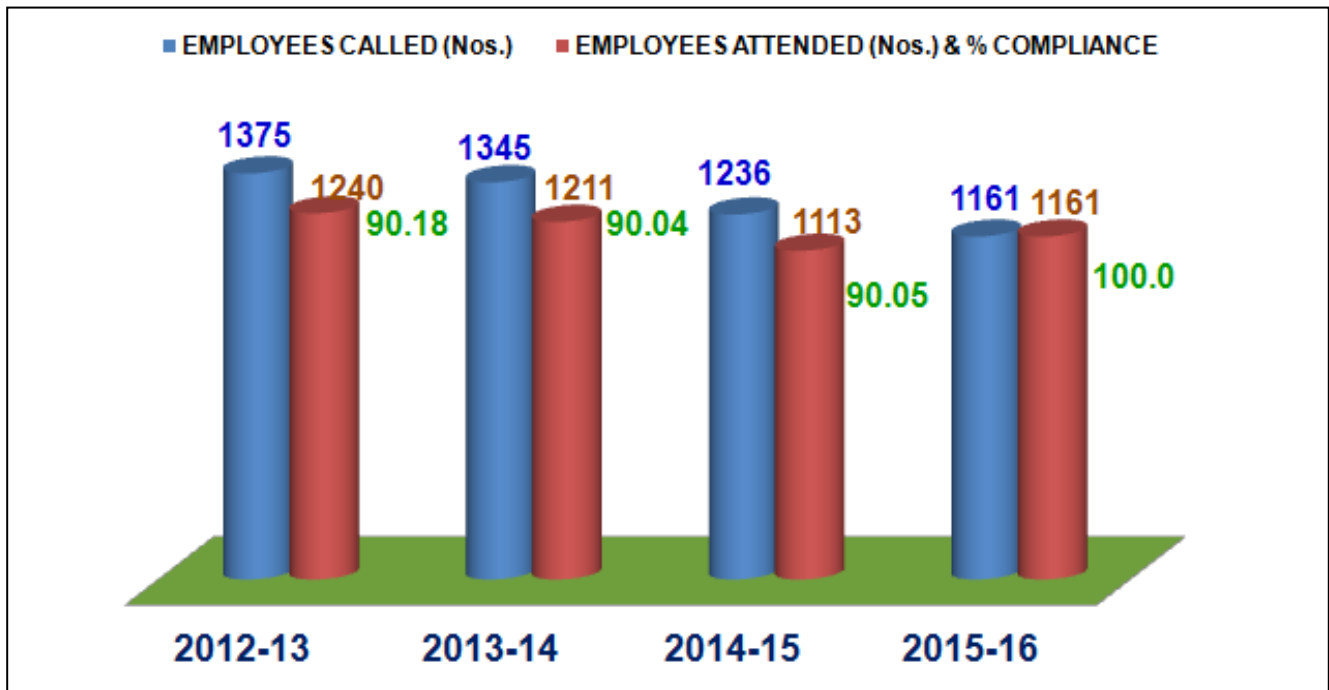
APPENDIX-A12

ORGANOGRAM FOR HSE DEPARTMENT 2016-17



Appendix-A14

Employees Occupational Health Check up Status



Appendix-A15

